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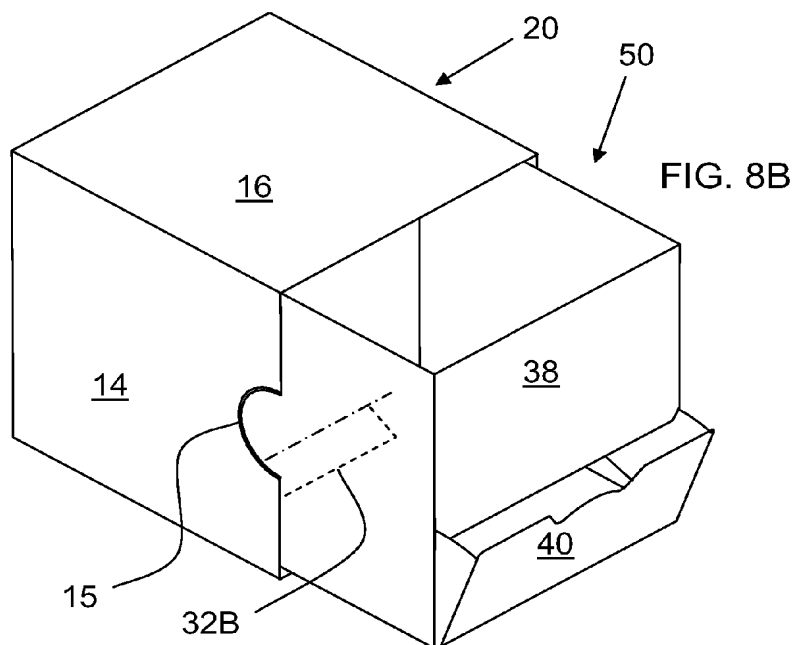
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(54) Title: PAPERBOARD BIN-CUBE



[Continued on next page]



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**(57) Abstract:** A package is disclosed comprising a shell (20) and a slidable tray (50) received therein, and having at least two access modes for dispensing contents from the package.

## PAPERBOARD BIN-CUBE

Inventor: Robert Daniel Workman

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### BACKGROUND

[0001] The present application is directed to paperboard packages and, more particularly, to packages for containing multiple consumer items and having more than one mode of opening the package for access to the contents.

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[0002] Manufacturers and retailers of consumer goods, such as health and beauty products, food and beverage products and the like, typically package their products in paperboard packages. For example, many consumer goods are packaged in containers having a tear-away opening (such as a tissue box) or having an outer shell with an inner sliding tray (such as for holding cotton swabs or medicine).

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[0003] To increase the usefulness and visual appeal of a package with a sliding tray, a package with alternative access modes is desired.

### SUMMARY

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[0004] In one aspect, a package for housing an item or items is disclosed comprising an outer shell and a sliding tray, with access to the items provided by sliding the tray out of the shell, and access to the items also provided through at least one additional access opening in the package.

[0005] Other aspects of the disclosed package will become apparent from the following description and the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Fig. 1A is a view of a blank for forming a shell;

[0007] Fig. 1B is a perspective view of the blank of Fig. 1A;

[0008] Fig. 2 is a perspective view of a step in forming a shell from the blank of Figs. 1A and 1B;

[0009] Figs. 3A and 3B are perspective views of additional steps in forming a shell from the blank of Figs. 1A and 1B;

[0010] Fig. 4A is a view of a blank for forming a tray;

[0011] Fig. 4B is a perspective view of the blank of Fig. 4A;

[0012] Figs. 5, 6A, 6B, 7A, and 7B are perspective views of steps in the forming of the blank of Figs. 4A and 4B into a tray;

[0013] Fig. 8A is a perspective view of a finished tray formed from the blank of Figs. 4A and 4B;

[0014] Fig. 8B is a perspective view of a finished package comprised of a shell and a tray;

[0015] Fig. 9A is a view of another blank for forming a tray;

[0016] Fig. 9B is a perspective view of the blank of Fig. 9A;

[0017] Figs. 10, 11A, and 11B are perspective views of steps in the forming of the blank of Figs. 9A and 9B into a tray;

[0018] Fig. 12A is a perspective view of a finished tray formed from the blank of Figs. 9A and 9B;

[0019] Fig. 12B is a perspective view of a finished package comprised of a shell and a tray; and

[0020] Figs. 13A and 13B are perspective views of other packages comprised of another shell.

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## DETAILED DESCRIPTION

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[0021] The package structure described below may be made of a variety of materials including, but not limited to paperboard (treated or untreated), plastic, APET, PLA and more. In addition, the package may be made of a combination of materials with the outer shell being made of one material and the inner container being made of another material. The material may be chosen based on manufacturing preferences for the type of product contained within. It is to be understood that a variety of locking mechanism may be added to the package at one or more openings to prevent unwanted access.

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[0022] FIG. 1 shows a plan view of shell blank 10, and FIG. 2 shows the same blank in perspective view. Certain exemplary parts of shell blank 10 will now be described. Generally solid lines are used to denote cut lines or edges, and dashed lines to denote fold or score lines. However, dashed lines are sometimes used to show hidden lines in a folded structure, in which case some fold lines in the same drawing may be shown as solid lines to avoid confusion.

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[0023] The major panels of shell blank 10 may include shell bottom panel 12, shell side panels 14, and shell top panel 16, hingedly attached together by fold or score lines. The major panels may be hingedly attached to shell bottom back flap 12B, shell top back flap 16B, and shell side back flaps 14B. The major panels may further be hingedly attached to shell bottom front flap 12F, shell top front flap 16F, and shell side front flaps 14F. The shell top panel 16 may be hingedly attached to shell glue flap 16G. At the hinged connection line between side

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panels 14 and shell side front flap 14F there may be provided an aperture 15 such as a circular- or other-shaped opening.

**[0024]** Shell blank 10 may be formed into shell 20 through a series of folding operations. The folding steps may be performed in a variety of sequences. An example sequence of steps is shown here. FIG. 2 shows shell bottom front flap 12F folded inwardly upon shell bottom panel 12, to which it may be glued or attached by other means. Shell top front flap 16F is shown folded inwardly upon shell top panel 16, to which it may be glued or attached by other means, and shell side front flaps 14F folded inwardly upon shell side panels 14, to which they may be glued. Thus, a smooth front edge of the structure is provided along the resulting folded edge. Also, the aperture 15 upon folding forms a cutaway access area whose use will be explained later. It is to be understood that other means of attaching including but not limited to stapling, sealing, taping, or even foldably attaching with or without using interlocking mechanisms, may be used in the place of gluing for any aspect of this invention as determined appropriate based on manufacturing preferences.

**[0025]** FIG. 3A shows shell top panel 16, shell side panels 14, and shell bottom panel 12 folded into a four-sided tube, which may be held together by shell glue flap 16G being glued to the inside of a now adjacent one of shell side panels 14. Note that a portion of the adjacent shell side front flap 14F may be cutaway to provide clearance for shell glue flap 16G. FIG. 3B shows the back of the shell closed by shell side back flaps 14B being folded inward, shell top back flap 16B being folded downward, and shell bottom back flap 12B being folded upward. These flaps may be glued to hold shut the back of the shell 20. Thus a partially enclosed box is formed as shell 20 that may receive a sliding tray to be described next.

[0026] FIG. 4A shows a plan view of tray blank 30 and FIG. 4B shows the same blank in perspective view. Certain exemplary parts of tray blank 30 will now be described. Generally solid lines are used to denote cut lines or edges, and dashed lines to denote fold or score lines. However, dashed lines are sometimes used to show hidden lines in a folded structure, in which case some fold lines in the same drawing may be shown as solid lines to avoid confusion.

[0027] The major panels of tray blank 30 may include tray back panel 36, tray side panels 34, and tray front panel 38, hingedly attached together by fold or score lines. The tray back panel 36 at its lower edge may be hingedly attached to tray bottom panel 32, which is at an opposite edge is attached to bin panel 40. Tray back panel 36 at its upper edge may be hingedly attached to tray back top flap 36T, while tray front panel 38 at its upper edge may be hingedly attached to tray front top flap 38T. Tray side panels 34 at their lower edge may be hingedly attached to tray side bottom flaps 34B. The tray side bottom flaps 34B may comprise interlocking fingers 34X. A tray bottom catch tab 32B may be formed in tray bottom panel 32.

[0028] Tray blank 30 may be formed into tray 50 through a series of folding operations. The folding steps may be performed in a variety of sequences. An example sequence of steps is shown here. FIG. 5 shows tray back top flap 36T folded inwardly upon tray back panel 36, to which it may be glued. Tray front top flap 38T is shown folded inwardly upon tray front panel 38, to which it may be glued. Folding of such flaps creates a smooth edge along the fold which will be present along certain top edges of the finished tray. If desired, similar top flaps could be provided for the tray side panels 34.

[0029] FIG. 6 shows a common fold created along the fold lines between tray bottom panel 32 and tray back panel 36, and between tray side panels 34 and tray side bottom flaps 34B. Next, a series of right angle folds is made between tray

back panel 36, tray side panels 34, and tray front panel 38 (with attached tray front top flap 38T), to form a four-sided tube as shown in FIG. 7A, which may be held together by tray glue flap 36G being glued to the inside of a now adjacent tray side panel 34. As a result of folding into the four-side tube shape shown in FIG. 7A, tray side bottom flaps 34B may come together above tray bottom panel 32. The tray side bottom flaps 34B may interlock through interlocking fingers 34X. Thus a partially enclosed box is formed as tray 50, that may be slidably received into shell 20 previously described.

**[0030]** Tray 50 as formed has an open top side, providing a first access point 51 through which items may be placed into or removed from the tray. Further, a second access point 52 may be provided through an opening in a portion of the front of tray 50, positioned as shown below tray front panel 38. This second access point 52 may be reversibly opened or closed with a tilting bin door 40, which comprises side wings 40W that may be folded to fit within tray 50 as shown in FIGS. 7B and 8A.

**[0031]** As shown in FIG. 8B, tray 50 may be slidably inserted into shell 20. When bin door 40 is closed, and the tray 50 is slid within shell 20, the contents may be completely enclosed. If bin door 40 is opened, items may be removed from within tray 50. Also, if tray 50 is slid out of shell 20, items may be removed through the open top of the tray. When tray 50 is slid forward, catch tab 32B on the tray bottom panel 32 may engage a portion of shell 20, such as an inward edge of shell bottom front flap 12F, to prevent tray 50 from coming completely out of shell 20.

**[0032]** FIG. 9A shows a plan view of another tray blank 130 and FIG. 9B shows the same blank in perspective view. Certain exemplary parts of tray blank 130 will now be described. The major panels of tray blank 130 may include tray back panel 136, tray side panels 134, and tray front panel 138, hingedly attached



together by fold or score lines. Tray front panel 138 at its lower edge may be hingedly attached to tray bottom panel 132, which is at an opposite edge is attached to tuck flap 132F. Tray front panel 138 at its upper edge may be hingedly attached to tray front top flap 138T. Tray side panels 134 at their lower edge may be hingedly attached to tray side bottom flaps 134B. Tray back panel 136 may have hingedly attached at its bottom edge a tray back bottom flap 136B, and hingedly attached at a side edge a glue flap 136G.

**[0033]** Tray blank 130 may be formed into tray 150 through a series of folding operations. The folding steps may be performed in a variety of sequences. An example sequence of steps is shown here. FIG. 10 shows tray back bottom flap 136B folded inwardly upon tray back panel 136, to which it may be glued or left unglued. Tray front top flap 138T is shown folded inwardly upon tray front panel 138, to which it may be preferably glued. Folding of front top flap 138T creates a smooth edge along the fold which will be present along a top edge of the finished tray. If desired, similar top flaps could be provided for the tray side panels 134 and back panel 136.

**[0034]** FIG. 11A shows the form of the tray after a series of right angle folds is made between tray back panel 136, tray side panels 134, and tray front panel 138 (with attached tray front top flap 138T), to form a four-sided tube as shown in FIG. 7A, which may be held together by tray glue flap 136G being glued to the inside of a now adjacent tray side panel 134. Then, as shown in FIG. 11B, tray side bottom flaps 134B may be folded inward, and tray bottom panel 132 folded upward and inward, closing one end of the tubular structure. Tuck flap 132F may be folded and inserted inside the tray to hold the back closed. Thus a partially enclosed box is formed as tray 150, that may be slidably received into shell 20 previously described. Although the tray 150 as shown in FIG. 11B is open on a side, in actual use it may be rotated to the position shown in FIG. 12A with the open end at the top.

[0035] Tray 150 as formed thus has an open top side, providing a first access point through which items may be placed into or removed from the tray. FIG. 13A shows how, with another shell 22, a second access point may be provided through an opening 24 in the top of shell 22, through which contents may be dispensed from the package, even when tray 150 is completely slid into the shell 22. It is to be understood that the opening 24 may be positioned on eth side of the shell. Opening 24 may comprise a membrane 26 such as a transparent plastic film that may be cut through with slit 28 to provide access to the contents. Alternately the opening may not have such a membrane. Opening 24 may be provided as a tear-away portion of shell 22, to protect the contents during shipping and handling.

[0036] As shown in FIG. 13B, such an opening 24 may also be provided in shell 22 that may be used with tray 50. Thus, the package shown in FIG. 13B may have three access points: first the bin 40, second the open top of tray 50 when slid out from the shell, and third the opening 24 in shell 22.

[0037] For any combination of shell and tray, a feature such as catch tab 32B, described earlier for tray 50, may be used to prevent a tray once inserted into a shell from being pulled completely of the shell. A catch tab may be provided on the bottom or sides of a tray, to interact with a complimentary feature on the inside of the shell. Such a complimentary feature may be a tab, an aperture, or even a paperboard edge (such as the edge of shell bottom front flap 12F) folded inward inside the shell.

[0038] Alternative embodiments are possible for the shell and the tray. For example, the shell may have an enclosed back as shown in the Figures. However, as will be understood by one skilled in the art, the shell may also have an open back. Also, while exemplary designs have been used to show the construction of a shell or tray, these are not meant to be limiting as other embodiments are possible.

[0039] In certain embodiments, die-cutting may be used as an exemplary method to make blanks for the shell and tray. It will be understood that other methods may be utilized, for example laser cutting, roller cutting, match metal tooling, shearing, knife cuts, and other methods to provide continuous or discontinuous cuts, cuts to varying depths, or any other methods that would provide cuts, scores, perforations or other operations useful for creating separation lines or folding lines.

[0040] In certain embodiments, the contents of the packages described herein may be, for example, cotton swabs, contact lens packages, medicine tablets or packages, hair accessories, candy, packages of nuts or fruit, chap-sticks, soaps, travel size products, razors, cigarettes, alternative tobacco products, gum, diapers or other small items, but it will be understood that many items may be contained within and dispensed from the package. It is to be further understood that the package could be made of stronger material or reinforced so that it may contain and dispense larger products, such as canned or bottled beverages, beverage bags (such as a wine bag for wine in a box) or other heavier products. In addition it is to be understood that this package design could be partitioned such that more than one product could be contained and dispensed within. The partition may be within the body as well as the opening areas and more than one additional opening may be added such that the products may be accessed individually. It is to be understood that one benefit this product may have is for restocking at the retailers' level.

[0041] It is to be understood that the one or more additional openings on the tray may be permanently removed. In addition it may be perforated such that it may only be opened once the consumer or end user breaks the perforations. The one or more secondary openings may be round (such as to hold a spout), oval, rectangular, square, or any other shape preferred by the manufacturer. The one or more secondary openings may run up to 1/10 of the height and/or length across

the front of the tray, up to  $\frac{1}{8}$  of the height and/or length of the tray, up to  $\frac{1}{4}$  of the height and or length of the tray, up to  $\frac{1}{2}$  of the height and or length of the tray, up to  $\frac{3}{4}$  of the height and or length of the tray, or up to the entire length of the tray. It is to be understood that the height and length of the one or more additional openings may be different from one another (such as  $\frac{1}{4}$  the height of the tray and  $\frac{1}{2}$  the length of the box) depending upon manufacturing preferences.

**[0042]** It is to be understood that the tray and/or shell may be lined with foil, paper, insulating material, or some other type of material to provide additional protection to the product within. It is to be understood that this liner may be perforated such that it is removed at the two or more openings to the package.

**[0043]** Although various aspects of the disclosed packaging structures have been shown and described, modifications may occur to those skilled in the art upon reading the specification.

## CLAIMS

1. A package for holding and dispensing items, the package comprising:

a shell forming a tube or box, having at least one open side;

5 a tray slidably received into said shell, the tray having an open top and at least one closure surface that closes said open side when said package is in a closed configuration;

wherein when the tray is slid at least partway out of said shell, items may be dispensed through said open top; and

at least one additional access opening through which items may be dispensed from said  
10 package.

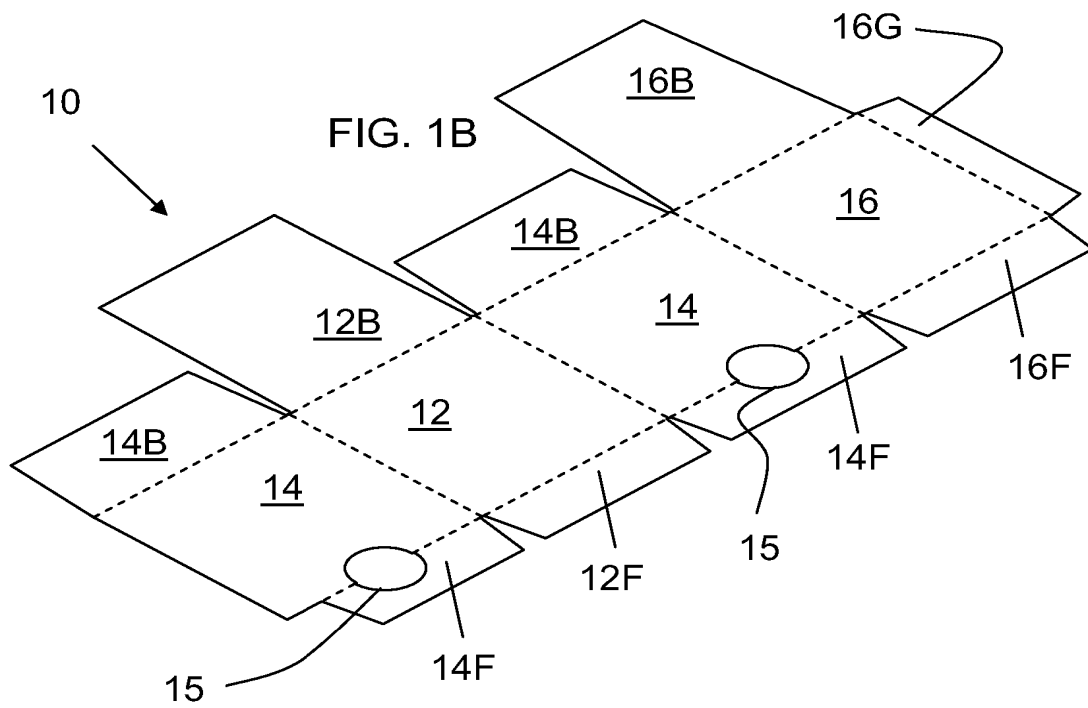
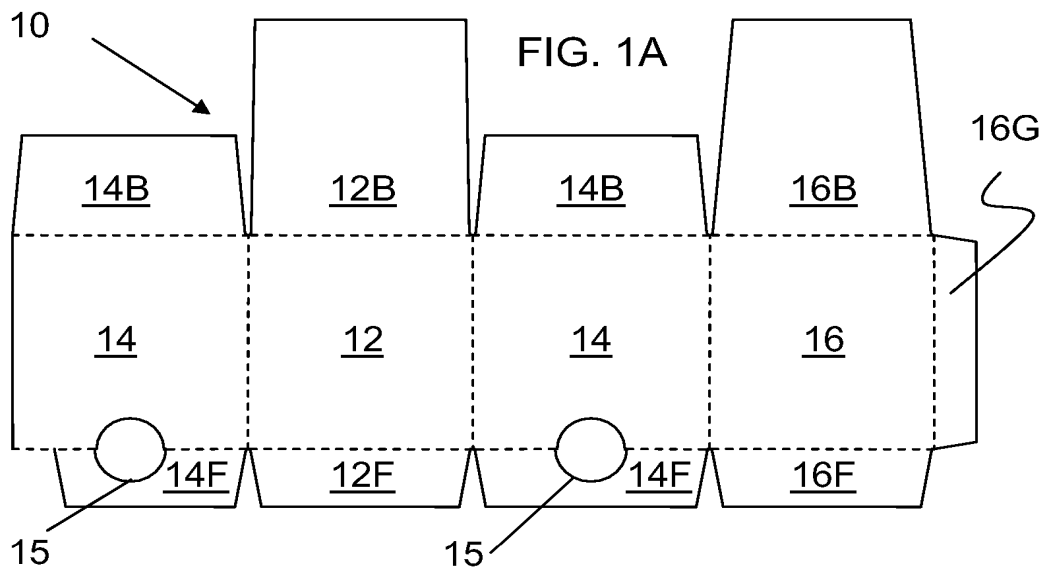
2. The package of claim 1, wherein said additional access opening comprises a bin door located on said closure surface.

3. The package of claim 1, wherein said additional access opening comprises an opening in the top or side of said shell.

15 4. The package of claim 1, wherein said shell and said tray comprise paperboard.

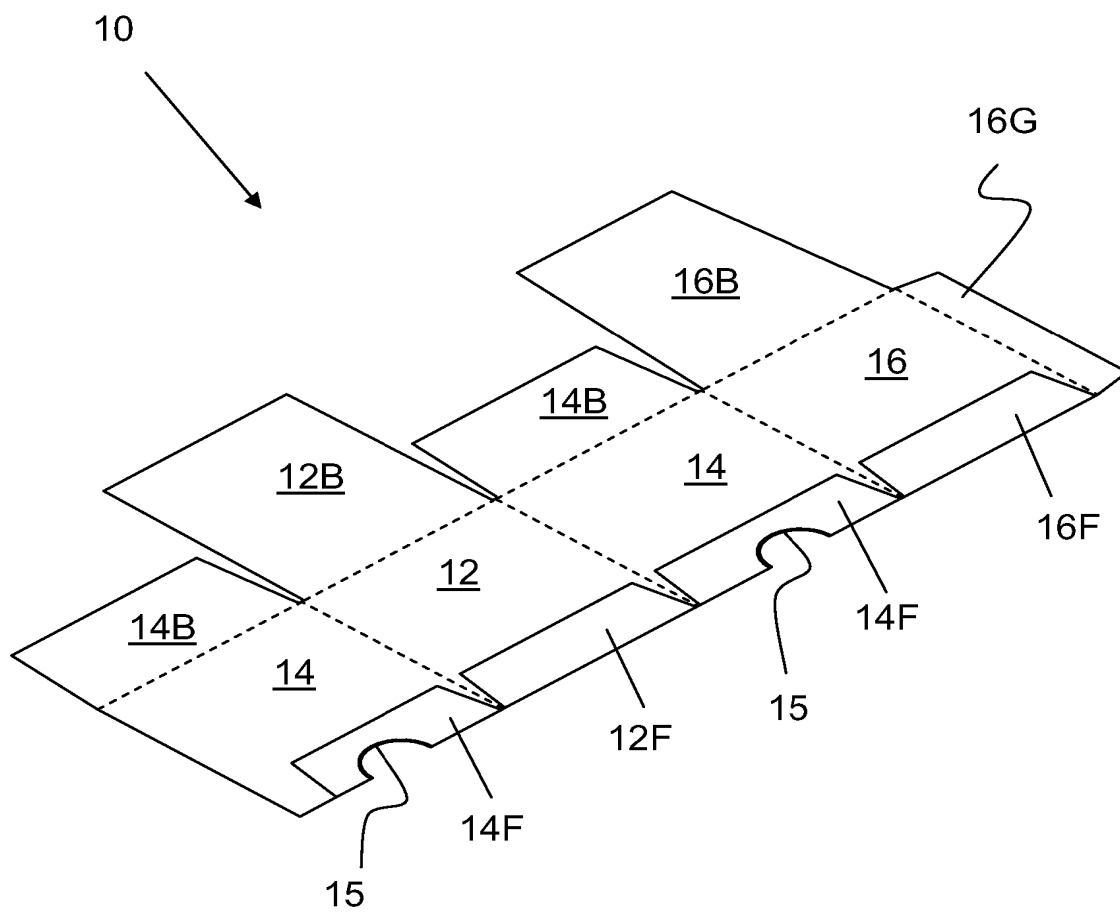
5. The package of claim 1, where said shell is a rectangular box open at one end.
6. The package of claim 1, where said shell is a rectangular tube open at both ends.

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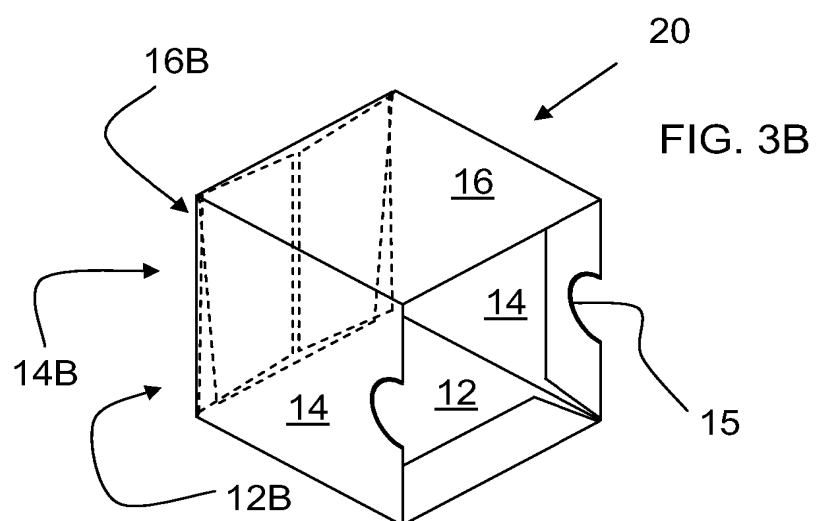
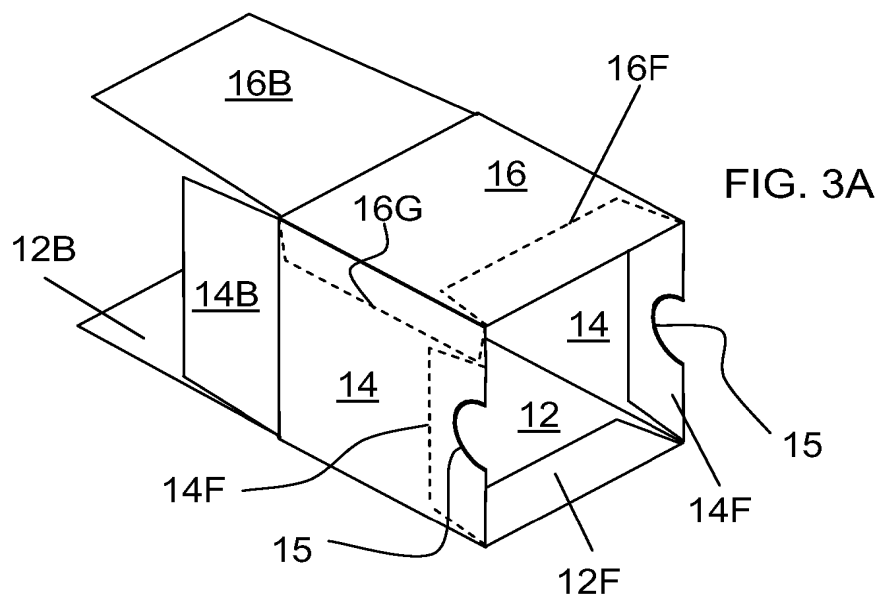
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FIG. 2

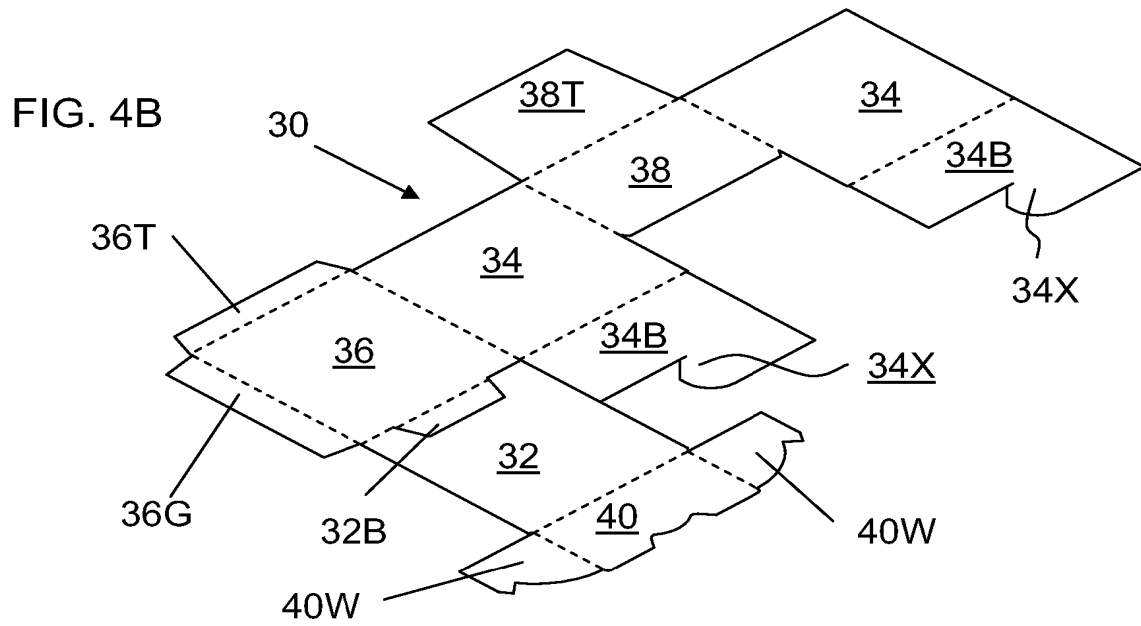
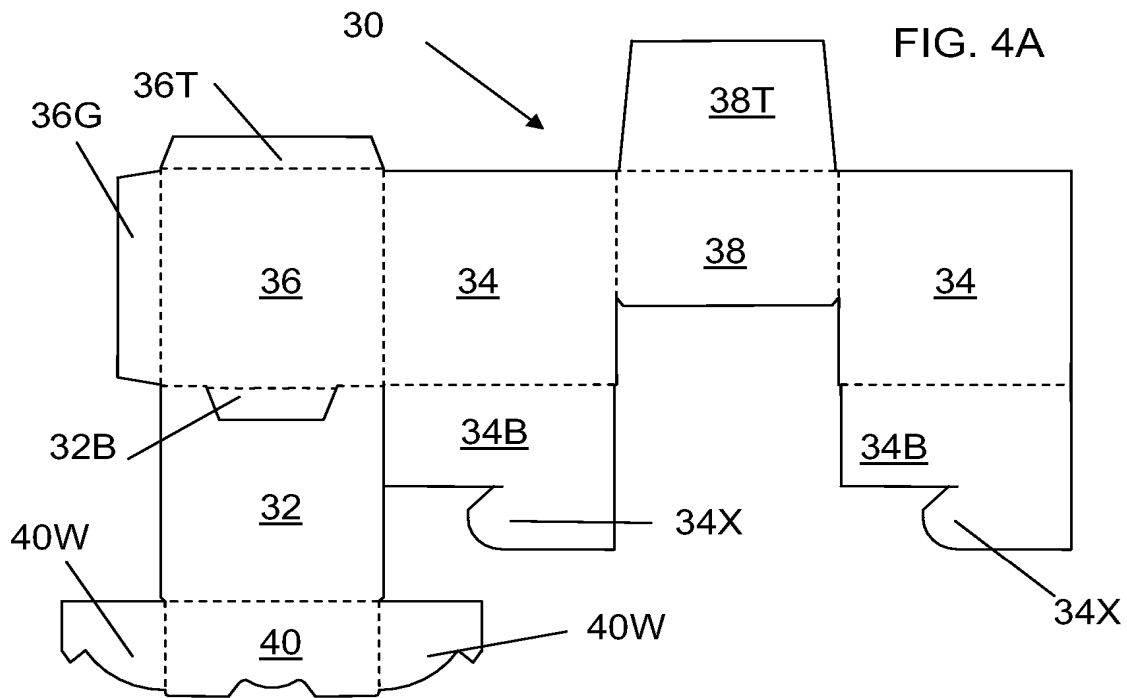




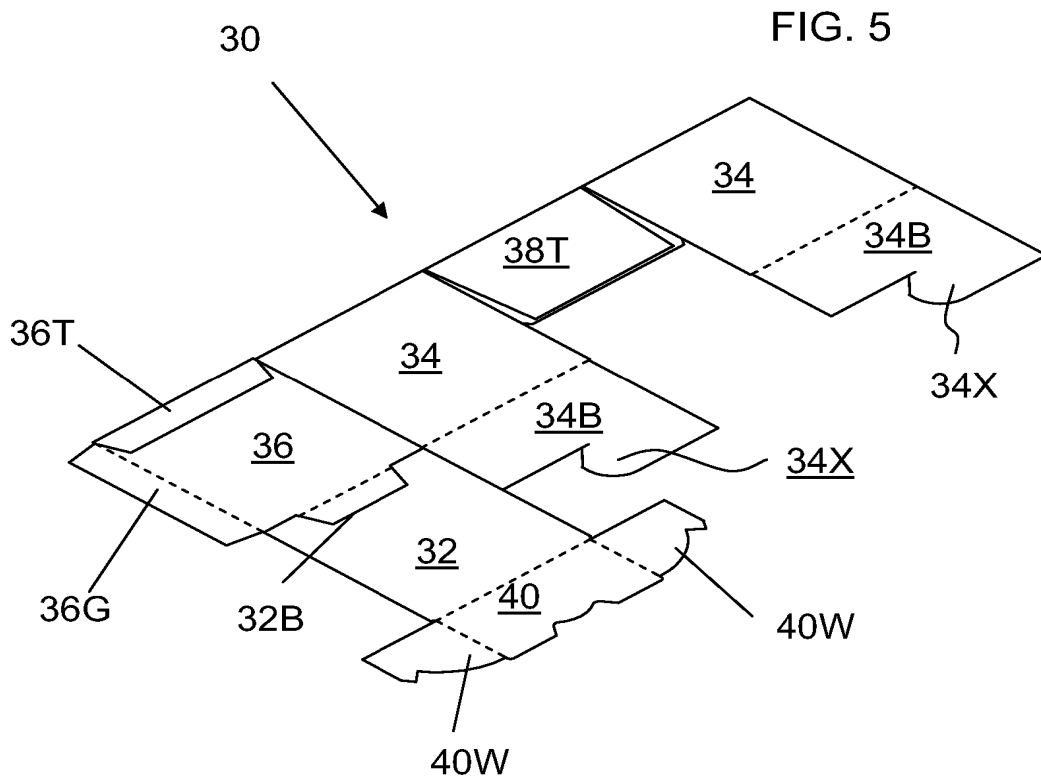
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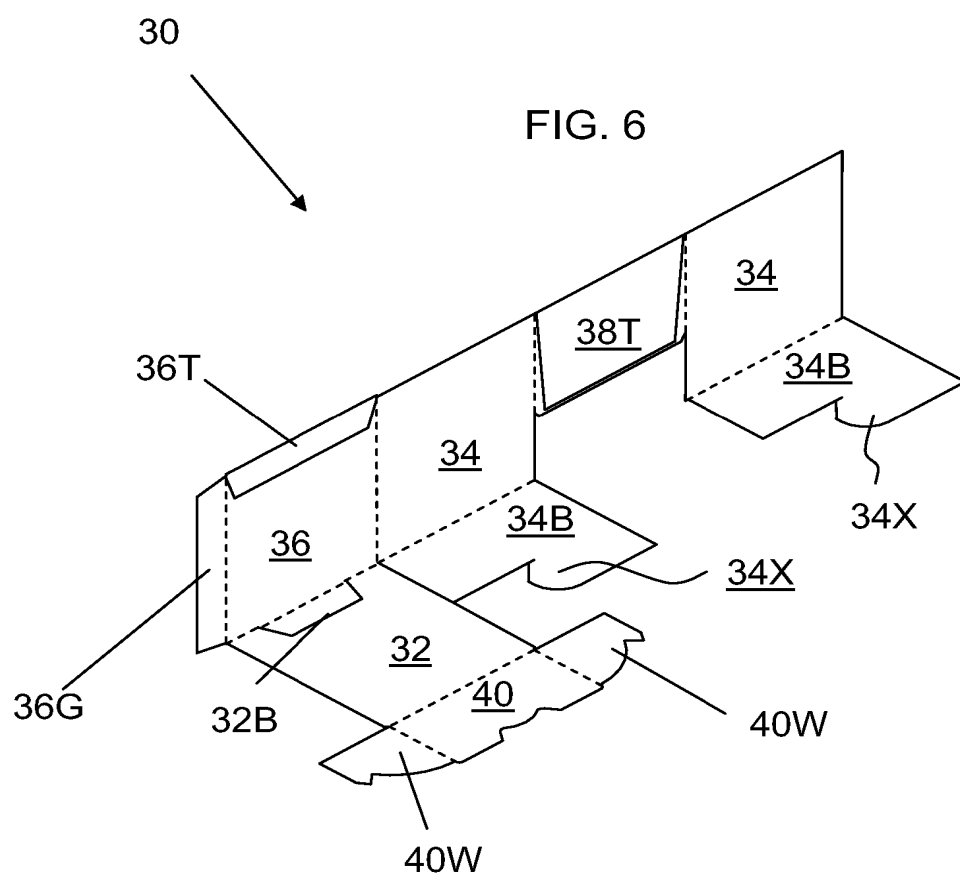


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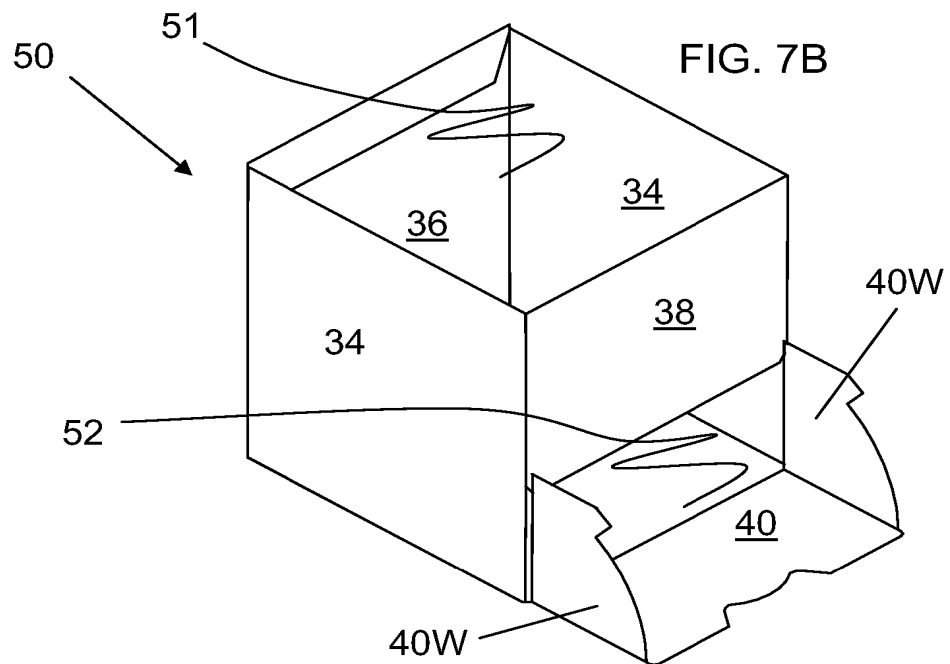
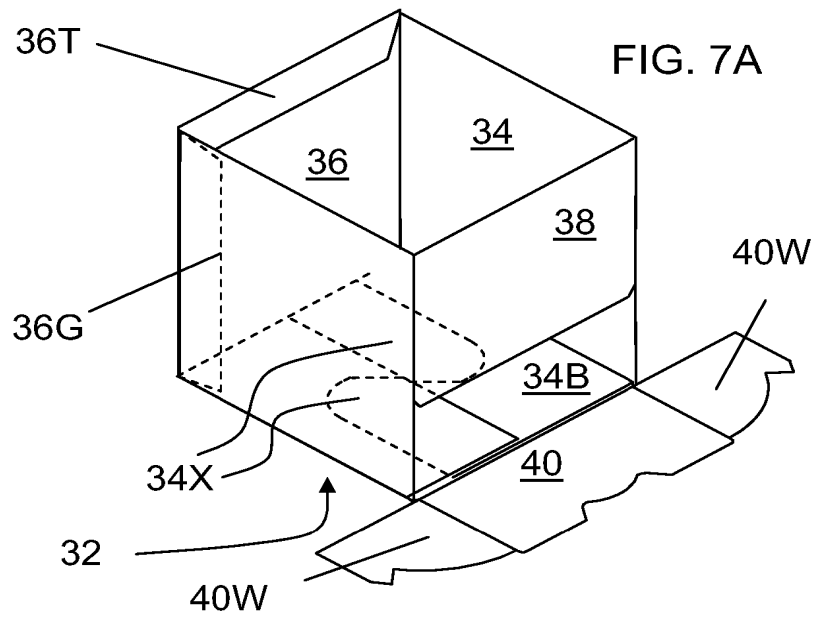


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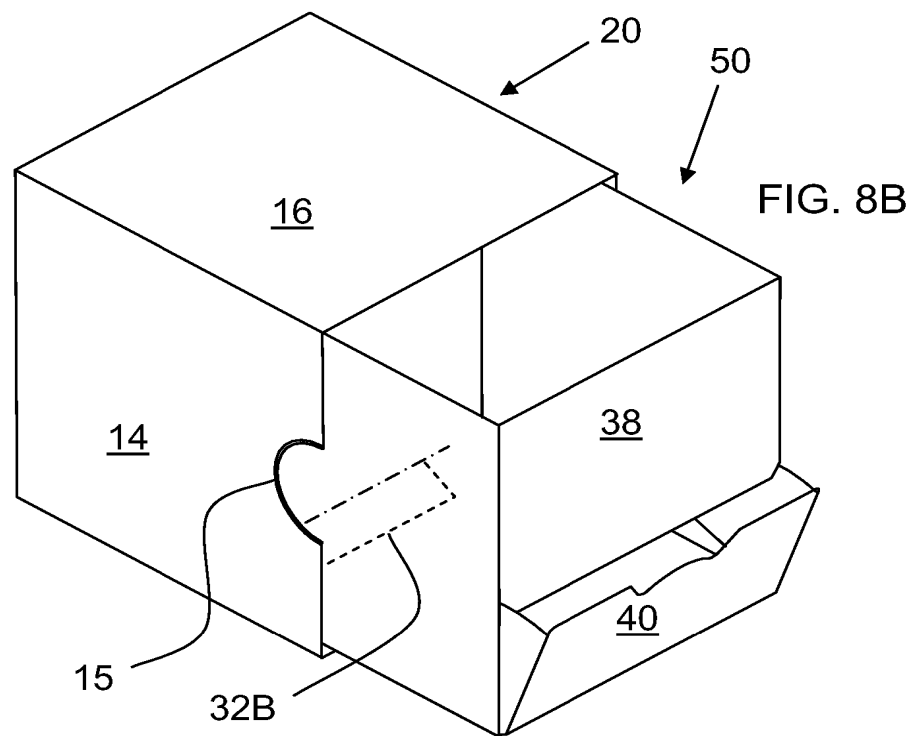
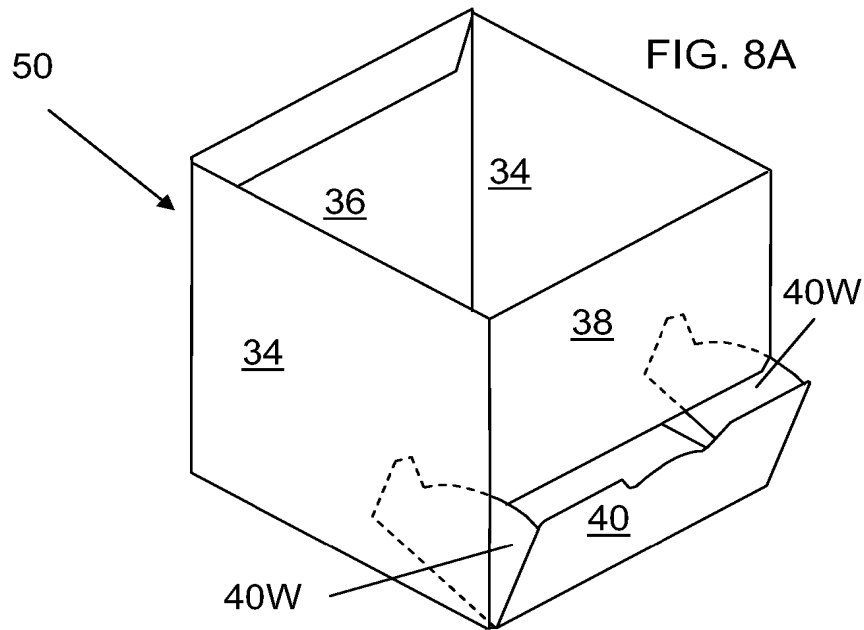




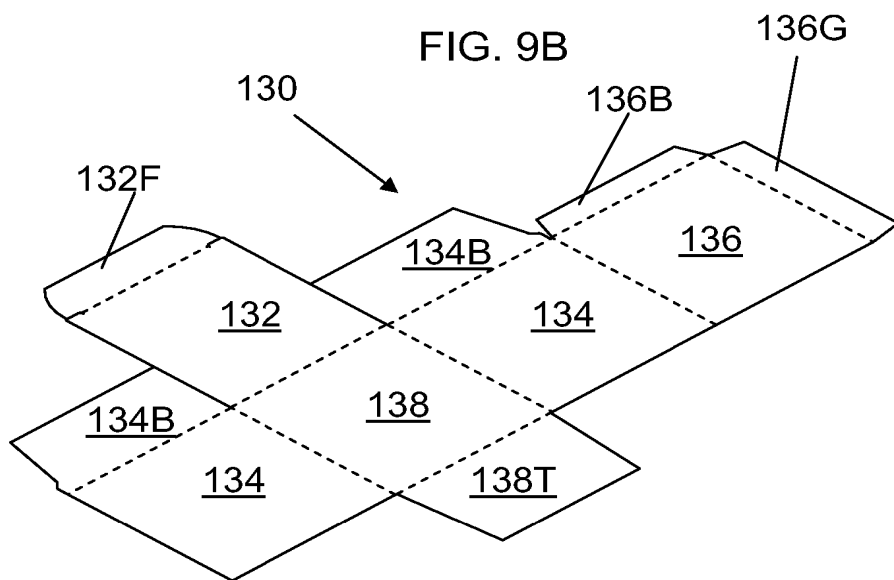
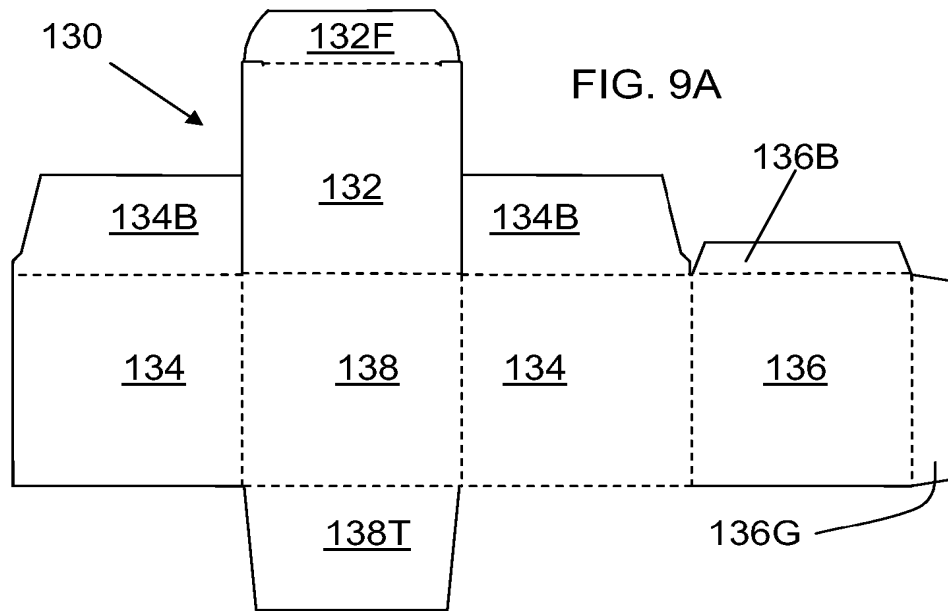
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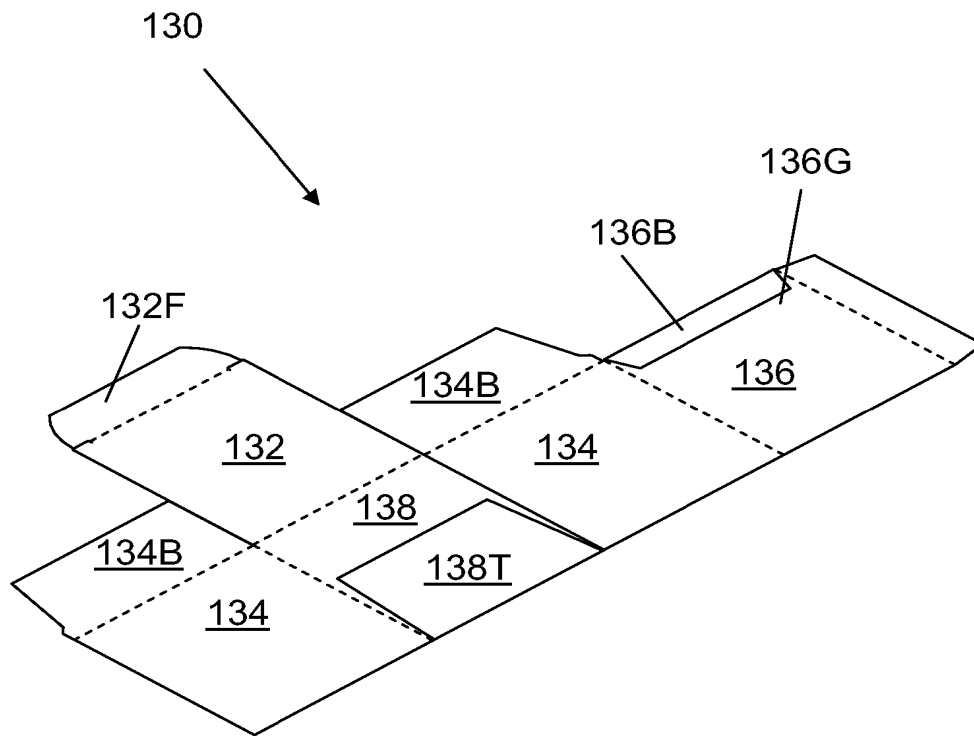


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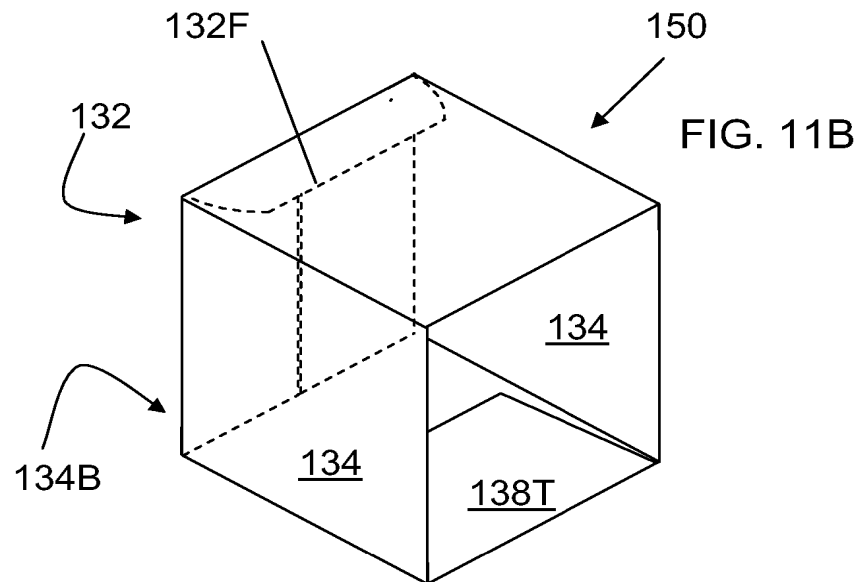
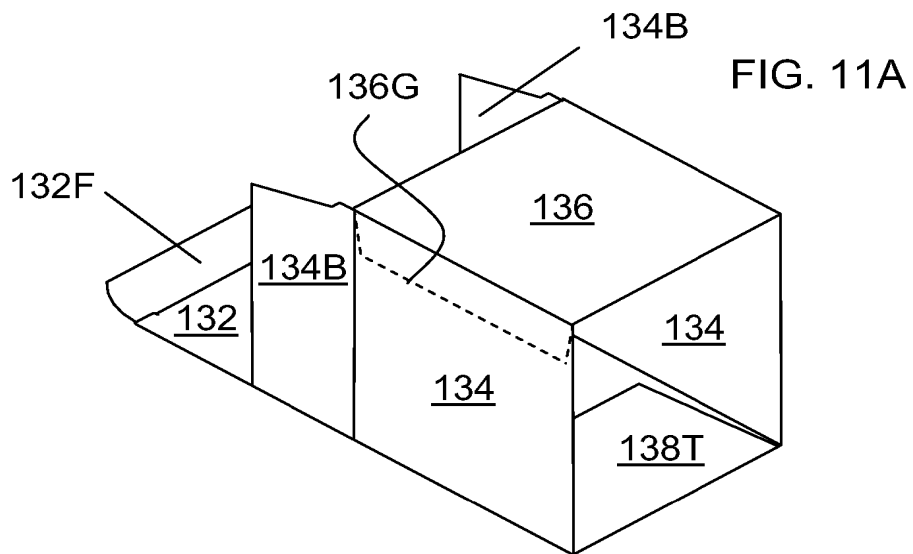
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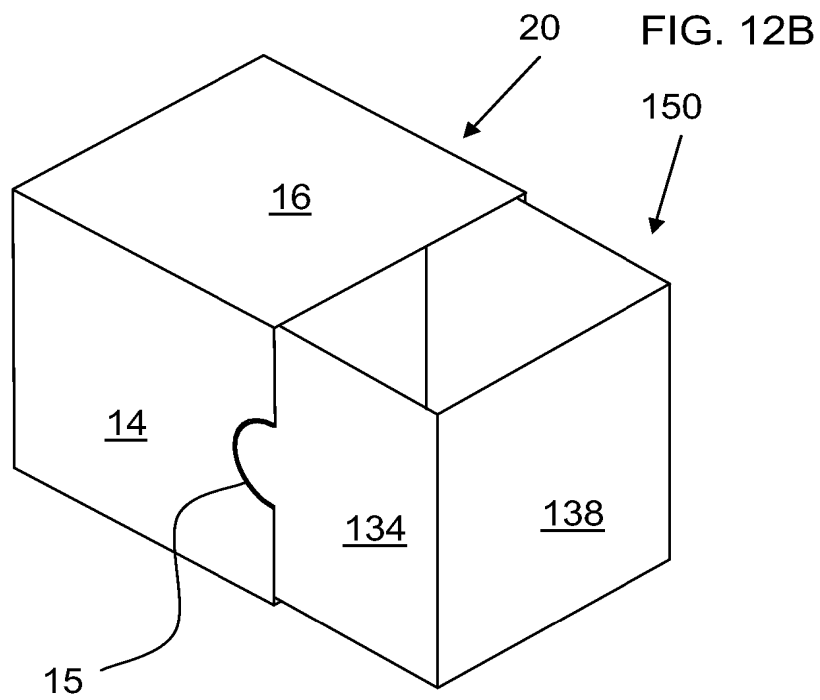
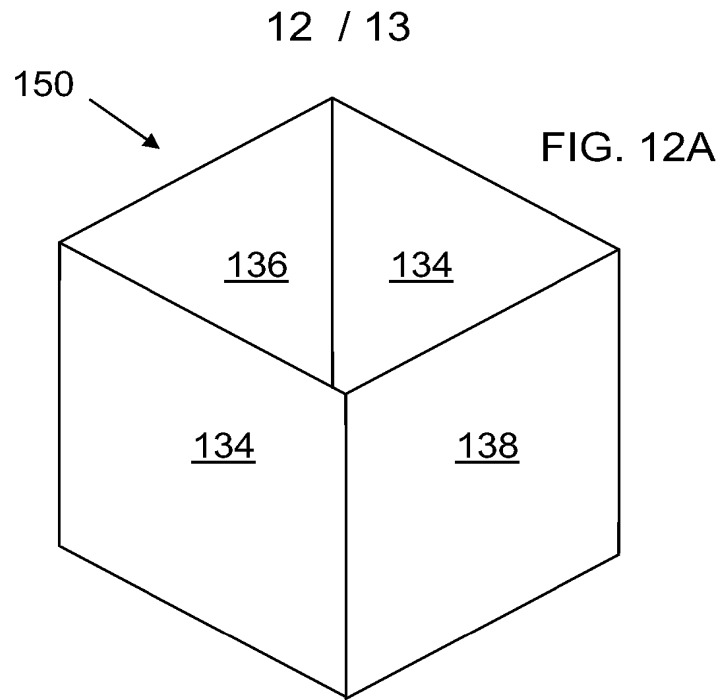
FIG. 10





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FIG. 13A

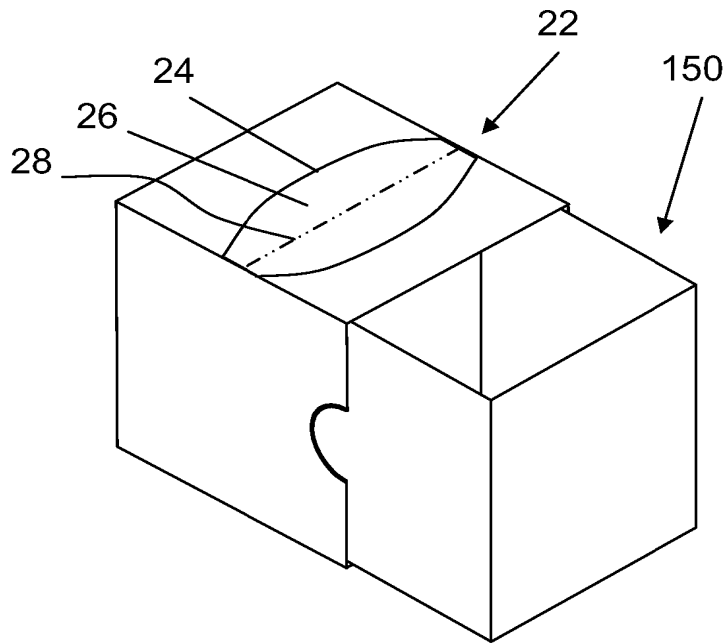
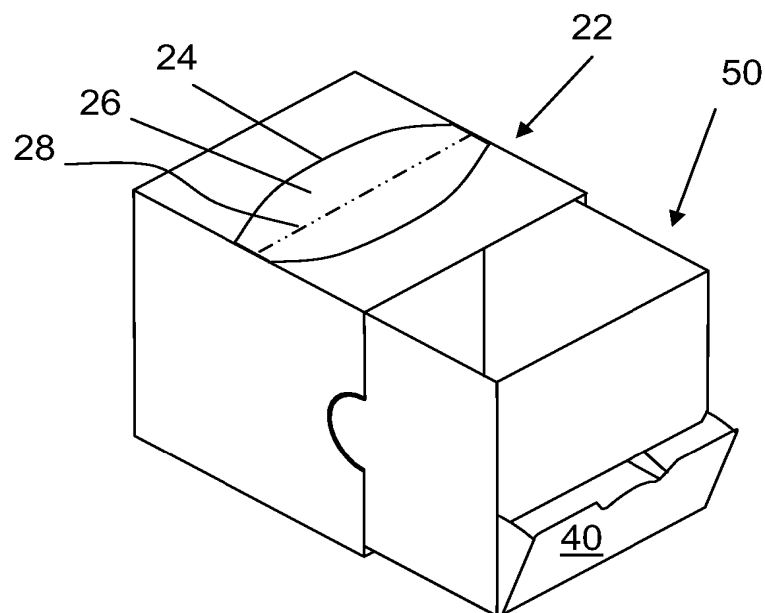


FIG. 13B



# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2009/051212

## A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D5/38  
ADD. B65D5/72

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 356 950 A (BENHAM ALBERT A) 2 November 1982 (1982-11-02) column 2, line 46 - column 4, line 15; figures 1-9	1, 3, 4, 6
X	US 5 673 796 A (TULLOCH JOHN W [US]) 7 October 1997 (1997-10-07) column 2, line 48 - column 3, line 23; figures 1, 2	1, 3-5
X	JP 07 291262 A (BANDOU SHIKI KK) 7 November 1995 (1995-11-07) abstract; figures 1-5	1, 2, 4, 5
X	JP 2005 212834 A (TOPPAN PRINTING CO LTD) 11 August 2005 (2005-08-11) abstract; figures 1-4	1, 3, 4, 6
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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13 November 2009

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# INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/051212

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 076 487 A (WUERTH ADOLF GMBH & CO KG [DE]) 13 April 1983 (1983-04-13) page 13 - page 18; figures 6-14 -----	1-4,6
X	US 3 684 084 A (KANZELBERGER JAMES C) 15 August 1972 (1972-08-15) column 2, line 59 - column 6, line 24; figures 1-14 -----	1,3,4,6

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

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